|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
PubMed (National Library of Medicine ID: 101738825)
Index Copernicus Value 2018: 75.71
Original Research Article
Volume 3, Issue 8; August: 2019; Page No. 62-65

EVALUATION OF FACTORS ASSOCIATED WITH ASYMPTOMATIC AIRFLOW OBSTRUCTION

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Article Info: Received 02 June 2019; Accepted 04 July. 2019
DOI: https://doi.org/10.32553/ijmbs.v3i8.452
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Conflict of interest: No conflict of interest.

Abstract

Background: Obstructive Airway Disease also imposes economic burden and increase the out of pocket expenditure of the patient and the country.(1) In previous researches it was found that obstructive Airway Disease were reported frequently and often present with complications. The most commonly seen obstructive airway diseases are COPD, Asthma, Bronchitis, Bronchiolitis and Bronchiectasis.

Material & Methods: In the present study100 Asymptomatic Patients with not previously diagnosed Obstructive Airway disease and patients with no evidence of any physical disease were included in the study. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant.

Results: Out of the total, 15 (20.3%) of the male population and 3 (11.5%) of the female population had asymptomatic airflow obstruction with statistically significant difference (P value <0.05). Out of the total on the basis of distribution according to BMI (Kg/m2), 7 (15.5%) patients had airflow obstruction among lower BMI population and 11 (20%) patients had airflow obstruction among higher BMI population with statistically non-significant difference (P value >0.05).). Out of the total on the basis of distribution according to weight, 4 (11.1%) patients had airflow obstruction among age <50 years population and 14 (21.8%) patients had airflow obstruction among age >50 years population with statistically significant difference (P value <0.05).

Conclusion: There was high burden of undiagnosed asymptomatic obstructive airway disease reported among patients who were males, higher age and had higher BMI. Patients who were current smokers had maximum airflow obstruction in compared to patients who never had smoking habit and patients who were ex-smokers.

Key words: Obstructive Airway Disease, COPD, Spirometry.

Introduction:

Obstructive Airway Disease also imposes economic burden and increase the out of pocket expenditure of the patient and the country.[1] In previous researches it was found that obstructive Airway Disease were reported frequently and often present with complications. The most commonly seen obstructive airway diseases are COPD, Asthma, Bronchitis, Bronchiolitis and Bronchiectasis.

Asymptomatic Airflow Obstruction causes major health problem related to lung diseases worldwide, along with stress on health care infrastructure of the country. However, majority of cases were remained undiagnosed despite of its high prevalence. A report stated that, about 60% cases of chronic obstructive pulmonary disease were remain undiagnosed.[2]

In various studies it was reported that less than 10% of cases who were screened by spirometry had severe or very severe obstructive Airway Disease.[3] However, prevalence of airflow obstruction with respiratory function was well documented.[4] In current scenario, only symptomatic patients visited to healthcare facilities for spirometry test, whereas patients with no symptoms were ignored.[5] There were very few researches conducted to find out the undiagnosed airflow obstruction, and limited data is available for therapeutic effectiveness and the role of programs for detecting undiagnosed airflow obstruction.[6] The present study was conducted to evaluate the factors associated with asymptomatic airflow obstruction.

MATERIALS & METHODS

The present prospective study was conducted at GCS Medical College, Hospital and Research Centre, Ahmadabad from January 2016 to December 2016.. A sample size of 100 was calculated at 95% confidence interval at 10% acceptable margin of error by epi info

software version 7.2. Patients were enrolled from outdoor and from ward by simple random sampling. Clearance from Institutional Ethics Committee was taken before start of study. Written informed consent was taken from each study participant.

The data were collected by detailed history, general physical and clinical examination from each patient after taking the written consent. Patients with not previously diagnosed Obstructive Airway disease and patients with no evidence of any physical disease were included in the study. Patients with previously diagnosed Obstructive Airway Disease, patients presenting with symptoms of Obstructive Airflow Obstruction and patients who were unable to perform Spirometry were excluded from present study. All the enrolled study participants were subjected to routine lab investigations and Spirometry (As per the ATS guidelines).

Data analysis was carried out using SPSS v22. All tests were done at alpha (level significance) of 5%; means a significant association present if p value was less than 0.05.

RESULTS

In the present study, we enrolled 100 asymptomatic patients of obstructive airway disease. Out of the total study participants 26% were females and 74% were males.

The mean age of males in study population was 51.28 years and mean age of females in study population was 48.62 years. Out of the total study participants, majority of patients were belonging to age group of 50 to 60years of age i.e., 42.6%. on the assessment of pulmonary function test, it was found that 70% of patient had normal PFT, 18% of patients had obstructive PFT and 12% of patients had restrictive PFT. Out of the total, 15 (20.3%) of the male population and 3 (11.5%) of the female population had asymptomatic airflow obstruction with statistically significant difference (P value <0.05). Out of the total on the basis of distribution according to BMI (Kg/m2), 7 (15.5%) patients had airflow obstruction among lower BMI population and 11 (20%) patients had airflow obstruction among higher BMI population with statistically non-significant difference (P value >0.05).). Out of the total on the basis of distribution according to weight, 4 (11.1%) patients had airflow obstruction among age <50 years population and 14 (21.8%) patients had airflow obstruction among age >50 years population with statistically significant difference (P value <0.05). (Table-1)

Table 1: Distribution of study variables with airflow obstruction

Variables	No. of Patients (%)	Patients With AO(%)	p-value
Males	74%	15 (20.3%)	**<0.05**
Females	26%	3 (11.5%)	
BMI (Kg/m^2)			
lower or normal BMI	45%	7 (15.5%)	**>0.05**
higher BMI	55%	11 (20%)	
Age (years)			
<50	64	14 (21.8%)	**<0.05**
>50	36	4 (11.1%)	

In the present study, on the assessment of obstructive airway disease on the basis of smoking pattern it was found that patients who were current smokers had maximum airflow obstruction (14%), out of them 7 patients had mild obstruction, 4 had moderate obstruction, 2 had severe obstruction and 1 had very severe obstruction. 2% Patients who never had smoking habit had obstructive airway disease, out of them 1 patient had mild obstruction and 1 had moderate obstruction. 2% Patients who were ex-smokers had obstructive airway disease, out of them 1 patient had moderate obstruction and 1 had severe obstruction. This difference was statistically significant (P value<0.05). (Table-2)

Table 2: Smoking Status and Obstructive Airway Disease

Smoking Status	Mild Obstruction	Moderate Obstruction	Severe Obstruction	Very Severe Obstruction		p-Value
Never Smoker	1	1	0	0	2	**<0.05**
Current Smoker	7	4	2	1	14	
Ex-Smoker	0	1	1	0	2	

DISCUSSION

In the present study, we enrolled 100 asymptomatic patients of obstructive airway disease. Out of the total study participants 26% were females and 74% were males. The mean age of males in study population was 51.28 years and mean age of females in study population was 48.62 years. Out of the total study participants, majority of patients were belonging to age group of 50 to 60years of age i.e., 42.6%. on the assessment of pulmonary function test, it was found that 70% of patient had normal PFT, 18% of patients had obstructive PFT and 12% of patients had restrictive PFT. Out of the total, 15 (20.3%) of the male population and 3 (11.5%) of the female population had asymptomatic airflow obstruction with statistically significant difference (P value <0.05). Out of the total on the basis of distribution according to BMI (Kg/m2), 7 (15.5%) patients had airflow obstruction among lower BMI population and 11 (20%) patients had airflow obstruction among higher BMI population with statistically non-significant difference (P value >0.05).). Out of the total on the basis of distribution according to weight, 4 (11.1%) patients had airflow obstruction among age <50 years population and 14 (21.8%) patients had airflow obstruction among age >50 years population with statistically significant difference (P value <0.05).

Similar results were obtained in a study conducted by Chol Shin et al among patients for asymptomatic obstructive airway disease and found that the overall prevalence of undiagnosed airflow obstruction was 12% and they reported males were more commonly affected than females. They reported higher incidence of undiagnosed airflow obstruction in patients age more than 60 years of age.[7] Similar results were obtained in a study conducted by Roeland MM et al among patients for asymptomatic obstructive airway disease and found that higher incidence of undiagnosed airflow obstruction in patients age more than 55 years of age. They found this difference was statistically significant (P value <0.05).[8] Similar results were obtained in a study conducted by Celli B.R. et al among patients for asymptomatic obstructive airway disease and found that patients who had higher BMI had maximum airflow obstruction in compared to patients who had lower or normal BMI. [9]

In the present study, on the assessment of obstructive airway disease on the basis of smoking pattern it was found that patients who were current smokers had maximum airflow obstruction (14%), out of them 7 patients had mild obstruction, 4 had moderate obstruction, 2 had severe obstruction and 1 had very severe obstruction. 2% Patients who never had smoking habit had obstructive airway disease, out of them 1 patient had mild obstruction and 1 had moderate obstruction. 2% Patients who were ex-smokers had obstructive airway disease, out of them 1 patient had moderate obstruction and 1 had severe obstruction. This difference was statistically significant (P value<0.05). Similar results were obtained in a study conducted by Coultas et al among patients for asymptomatic obstructive airway disease and found that patients who were current smokers had maximum airflow obstruction in compared to patients who never had smoking habit and patients who were ex-smokers.[10]

CONCLUSION

We concluded from the present study that there was high burden of undiagnosed asymptomatic obstructive airway disease reported among patients who were males, higher age and had higher BMI. Patients who were current smokers had maximum airflow obstruction in compared to patients who never had smoking habit and patients who were ex-smokers.

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